

REMARKS

Claims 15-27 and 29-34 are currently pending of which claims 15 and 29 are independent. The office action indicates that claims 16 and 18-20 contain allowable subject matter. However, claims 15, 17, 21-25, 27, and 29-34 stand rejected as being unpatentable over Vilella (U.S. Pat. No. 6,681,038) in view of Beers (U.S. Pat. No. 5,680,936). Neither reference, however, alone or in combination, teaches or suggests every limitation of the independent claims. Further, both references teach away from the claimed invention.

Claim 15 is directed to a method of manufacturing a high-frequency assembly that includes a plurality of components. At least one of the components is frequency specific. A placing apparatus of an automatic assembly apparatus places a plurality of components (e.g., electronic components) onto a high-frequency assembly. Before the placing apparatus grips a frequency-specific component for placement on the assembly, the component is identified using a frequency-encoding feature on the component. If the identification indicates that the high-frequency component is the correct component for the assembly, the component is accepted for placement on the assembly. Otherwise, the component is rejected.

The primary reference, Vilella, discloses a high-resolution, digital image inspection system for electronic assemblies. The system, according to Vilella, analyzes digital images of an assembly and improves both defect detection and testing of the assemblies. *Vilella*, col. 2, ll. 46-53. The Office Action acknowledges that Vilella fails to teach or suggest, "a placing apparatus for placing a plurality off components on an assembly, including a frequency-specific component." *Office Action*, p. 3, ll. 8-9. While this is true, there are several other claim limitations that Vilella also fails to teach or suggest.

First, Vilella does not teach or suggest anything regarding a "frequency-specific component," as claimed in claim 15. In fact, the entirety of the Vilella disclosure is completely devoid of any mention of the term "frequency-specific component." Because Vilella fails to even

mention "frequency-specific components," Vilella cannot teach or suggest, "identifying a frequency-encoding feature on a frequency-specific component prior to gripping the frequency-specific component with the placing apparatus," as claimed in claim 15. Nor can Vilella teach or suggest, any limitation that recites performing a function based on a "frequency-specific component," including those limitations reciting accepting (or rejecting) the frequency-specific component for connection to the high-frequency assembly if the frequency-encoding feature indicates that the frequency-specific component is (or is not) a correct component for the assembly.

Second, although Vilella discusses electronic component assembly, it is only to provide context for the core teachings of Vilella, which is a device to inspect electronic component assemblies. Inspection of an assembly in Vilella can only be accomplished after some or all of the components have been installed on the board. Indeed, Vilella discloses that the disclosed device functions as a cooling unit after the components have been soldered to a printed circuit board and cured in an oven. *Vilella*, col. 3, ll. 21-32. Even in embodiments where the Vilella device is placed in the assembly line before assembly is complete, the disclosed device detects defects in components that have already been assembled to the board. *Vilella*, col. 3, ll. 33-48.

Vilella relates to the assessment of a completed (or semi-completed) assembly. Thus, the Vilella process necessarily occurs after all, or some of the relevant components, have already been assembled on the board. Vilella does disclose accepting or rejecting a board, but even that occurs after assembly of a component on the board is complete. Indeed, Vilella directly contradicts the claimed invention, which explicitly recites claim limitations that occur before the component is placed on a board. Because whatever Vilella teaches occurs after the components have been assembled on the board, Vilella cannot teach or suggest any of the features of the claimed invention.

The secondary reference, Beers, does not remedy Vilella. Beers discloses using a conveyor to transport circuit boards along a production line. According to Beers, circuit boards are removed from an input conveyor and transported to an off-line test assembly via another conveyor where they are tested using commercially available testing apparatuses. Based on the results of those tests, the boards are selectively placed on output conveyors. Boards that pass the tests are placed on one output conveyor, while boards that fail the tests are placed on another, different output conveyor. *Beers*, col. 3, ll. 59-63.

Indeed, Beers fails to remedy Vilella because Beers also discloses a device that necessarily performs its functions after the components are placed on a circuit board. Beers is devoid of any discussion of identifying frequency-encoding features on frequency-specific components prior to gripping the frequency-specific component with a placing apparatus. Nor does Beers ever teach or suggest accepting (or rejecting) a component for connection to a high-frequency assembly if the frequency-encoding feature indicates that the frequency-specific component is (or is not) a correct component for the assembly. In Beers, the board must be at least partially populated with electronic components so that testing on those components can occur. Otherwise, a system for transporting boards to be tested is non-sensical.

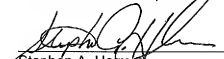
Therefore, both Vilella and Beers disclose processes that occur after the electronic components are soldered or placed onto the Board. Since the operation of both methods necessarily relies on the fact that the boards must be at least partially populated with components, they cannot teach or suggest any of the things that occur before those components are assembled to the board, as does claim 15. Additionally, neither reference even hints at identifying a frequency-specific feature, or a frequency-encoding feature on a frequency-specific component. Therefore, there is no reason to combine the references, and none of the cited references, alone or in combination, teaches or suggests claim 18 or any of its dependent claims.

Claim 29 is the corresponding apparatus claim and recites language similar to that of claim 15. Therefore, for reasons similar to those stated above, claim 29 and its dependent claims are non-obvious over the cited art.

Finally, the Office Action indicates that dependent claim 26 stands rejected as being obvious over Vilella in view of Beers, and in further view of an Official Notice. However, the Official Notice fails to remedy either Vilella or Beers. The Official Notice is nothing more than an unsupported statement. The Office is requested to provide proof supporting the Official Notice in the next Office Action, or withdraw the rejection. Claim 26 is also patentable over the cited art.

In light of the foregoing remarks, all claims are in condition for immediate allowance. Therefore, Applicant respectfully requests that the Examiner issue a Notice of Allowance for all pending claims.

Respectfully submitted,
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